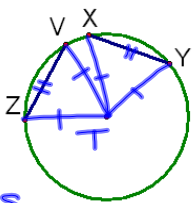


10-3 Apply Properties of Chords



Given: $\overline{XY} \cong \overline{VZ}$

Prove: $\widehat{XY} \cong \widehat{VZ}$

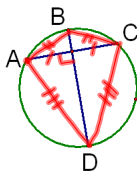
Theorem 10.3--In a circle or in congruent circles, 2 minor arcs are congruent iff their corresponding chords are congruent

① If 2 arcs \cong , then chords \cong

② If 2 chords \cong , then arcs \cong

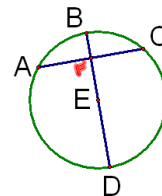
S.	R.
① $\overline{XY} \cong \overline{VZ}$	① Given
② Draw \overline{TX} , \overline{TV} , \overline{TY} , \overline{TZ}	② Through any 2 pts there is exactly 1 line
③ $\overline{TX} \cong \overline{TV} \cong \overline{TY} \cong \overline{TZ}$	③ All radii in a circle \cong
④ $\triangle ZTV \cong \triangle XTY$	④ SSS
⑤ $\angle ZTV \cong \angle XTY$	⑤ CPCTC
⑥ $\widehat{VZ} \cong \widehat{XY}$	⑥ def. of measure of minor arc *
⑦ $\overline{XY} \cong \overline{VZ}$	⑦ symmetric

Theorem 10-4 If one chord is a perpendicular bisector of another chord, then the first chord is a diameter.



G: $\overline{BD} \perp \text{bis } \overline{AC}$

Concl: \overline{BD} is the diameter

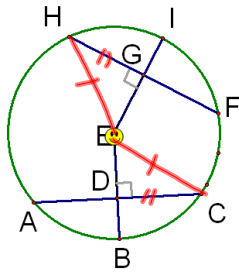


Theorem 10-5 In a circle, if the diameter is perpendicular to a chord, it bisects the chord and its arc.

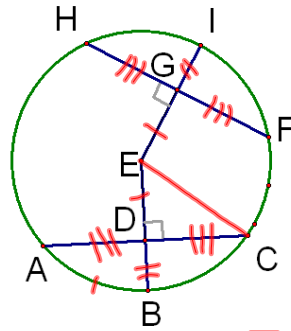
G: \overline{BD} (the diameter) $\perp \overline{AC}$

C: $\overline{AE} \cong \overline{CE}$
 $\widehat{AB} \cong \widehat{BC}$

Theorem 10.6--In a circle, or in congruent circles, 2 chords are congruent iff they are equidistant from the center



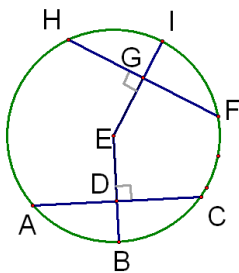
G: $\overline{HF} \cong \overline{AC}$
 Concl: $\overline{GE} \cong \overline{DE}$



Given: $\overline{AC} \cong \overline{HF}$

What can you conclude?

$\overline{GE} \cong \overline{DE}$
 $\overline{AD} \cong \overline{DC} \cong \overline{HG} \cong \overline{GF}$ $\widehat{AF} \cong \widehat{AC}$
 $\widehat{AB} \cong \widehat{BC} \cong \widehat{HI} \cong \widehat{IF}$

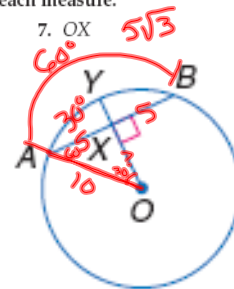


Circle O has a radius of 10, $AB = 10$, and $m\widehat{AB} = 60$. Find each measure.

5. $m\widehat{AY}$

6. AX

7. OX



Exercises 5-7

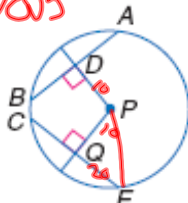
In $\odot P$, $PD = 10$, $PQ = 10$, and $QE = 20$. Find each measure.

8. AB

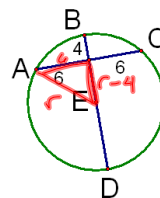
40

9. PE

10.5



Exercises 8-9



What is the radius?

$$r^2 = 6^2 + (r-4)^2$$

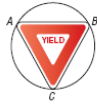
$$r^2 = 36 + r^2 - 8r + 16$$

$$-32 = -8r$$

$$6.5 = r$$

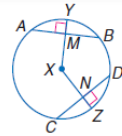
Application 10. **TRAFFIC SIGNS** A yield sign is an equilateral triangle. Find the measure of each arc of the circle circumscribed about the yield sign.

120°



In $\odot X$, $AB = 30$, $CD = 30$, and $m\widehat{CZ} = 40$. Find each measure.

- | | |
|---------------------|---------------------|
| 11. AM | 12. MB |
| 13. CN | 14. ND |
| 15. $m\widehat{DZ}$ | 16. $m\widehat{CD}$ |
| 17. $m\widehat{AB}$ | 18. $m\widehat{YB}$ |

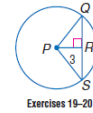


The radius of $\odot P$ is 5 and $PR = 3$. Find each measure.

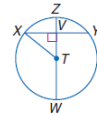
19. QR 20. QS

In $\odot T$, $ZV = 1$, and $TW = 13$. Find each measure.

21. XV 22. XY



Exercises 19-20



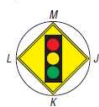
Exercises 21-22

TRAFFIC SIGNS Determine the measure of each arc of the circle circumscribed about the traffic sign.

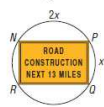
23. regular octagon



24. square

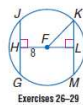


25. rectangle



In $\odot F$, $\overline{FH} \cong \overline{FL}$ and $FK = 17$. Find each measure.

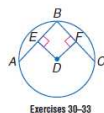
26. LK 27. KM
28. JG 29. JH



Exercises 26-29

In $\odot D$, $CF = 8$, $DE = FD$, and $DC = 10$. Find each measure.

30. FB 31. BC
32. AB 33. ED



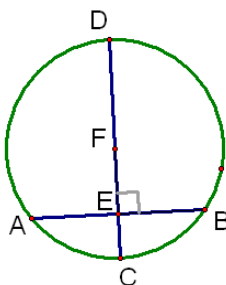
Exercises 30-33

34. **ALGEBRA** In $\odot Z$, $PZ = ZQ$, $XY = 4x - 5$, and $ST = -5x + 13$. Find SQ .



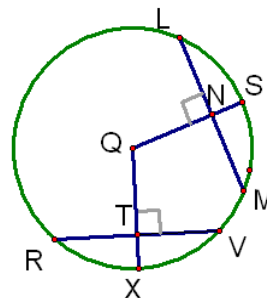
35. **ALGEBRA** In $\odot B$, the diameter

HW p667-669
3-11, 18-20, 24, 30



Given: $\overline{AB} \perp \overline{CD}$

Prove: $\overline{AE} \cong \overline{EB}$



Given: $\overline{LM} \perp \overline{QS}$
 $\overline{LM} \cong \overline{RV}$
 $\overline{QT} \perp \overline{RV}$

Prove: $\overline{QN} \cong \overline{QT}$